DOE/GO-102001-1165
NREL/BK-710-29267
May 2001

2.1 Green Teams – Innovations in Planning, Design, and Operation

Buildings or facilities that can be called *green* are different from conventional facilities. How these facilities differ from the norm can vary. They may be built on previously developed *brownfield* (actually or apparently contaminated) sites. They may limit all development impacts to a small portion of a site and maintain the rest as open space. They may have adapted an older building in a particularly responsible way. Nearly all are more frugal in their energy use. Most use water more efficiently. Often materials are carefully selected to minimize *life-cycle* environmental impacts, or the facility may simply be operated in an environmentally responsible manner.

How these facilities got to be "green" differs greatly from project to project, but a lot of it has to do with *process*. Most successful green facilities are developed or renovated with a process that is far from "business as usual." With a major renovation or new building project, it is a process that includes teamwork among many different players—from architects and engineers to contractors and facility managers. Often there are participants on the team with special expertise in green development. Almost always there is a strong focus on *integration* in this planning and design process, and a desire to find creative solutions to design challenges that yield multiple benefits—for example, a design strategy that at once reduces material use during construction, saves energy during facility operation, and results in a healthier working environment. The integrated design team working on a green facility nearly always has an attitude about "making it happen" and doing so in a way that keeps environmental impacts to a minimum throughout sitework, construction, and operation.

Creating greener facilities is not limited to new buildings or major renovations. Many green principles can be applied to any project. The "Greening of the White House" project, for example, established processes and procedures that will influence ongoing operations and renovations—as those renovations are done.

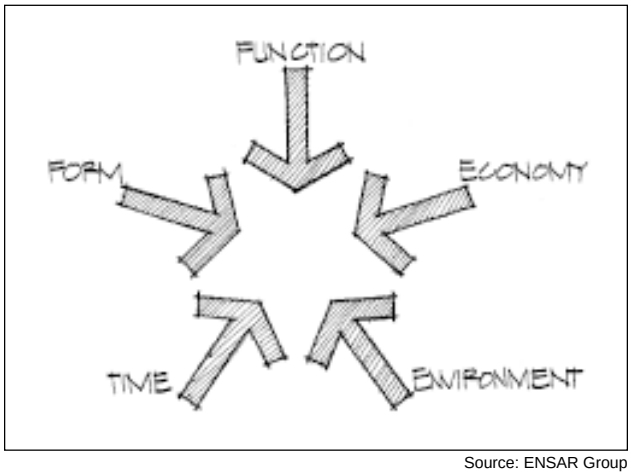
Opportunities

With new facilities and major renovations, developing greening goals and design program criteria *before* beginning the actual design is one of the most effective strategies for achieving sustainability goals with federal projects. Thus, when the architects, planners, engineers, and other participants start developing concepts early in the design process, they are already integrating solutions—and moving toward designs that will likely be both high-performance and sustainable.

Technical Information

The first step is to establish goals or requirements that the project achieve certain levels of environmental and energy performance. The basis for much of this is laid out in Executive Orders, Congressional acts, specific agency mandates, and other policies that are already in place for Federal facilities. Going beyond the minimum environmental and energy requirements for a facility necessitates setting additional goals. This may reference standardized green criteria—for example, achieving a "Silver" rating with the U.S. Green Building Council's LEED rating system for commercial buildings—or specific criteria may be developed just for the project in question. Within a particular agency, environmental goals for facilities may evolve over time as experience grows—with each project being greener than the previous one. Of course, all of these green goals must support the other needs relating to function, aesthetics, security, cost, and schedule. The challenge is in integrating the environmental goals without compromising any of the primary project needs and objectives (see diagram below).

Selecting a team with solid experience in green design is critically important in achieving the environmental and energy goals established for a project. (Whether the goals come first or the team comes first



Source: ENSAR Group

Greening charrette

Source: ENSAR Group

will vary by project.) Specifically, the team should include facility representatives (including, for example, the project manager when new construction or major renovation is involved, the facility manager, in-house design and engineering personnel, and other employees to provide breadth), and may include—as needed—architects, engineers, planners, landscape architects, interior designers, energy and sustainable design consultants, community representatives, regulatory officials, and other stakeholders in the project. With new buildings or major renovations, the integrated design team should, to the extent possible, be composed of individuals from within the design and engineering firms hired for the project and from the agency for which the facility is being built or renovated (the client). Outside green expertise is often also needed, but this requirement should disappear over time as more design firms, engineering companies, and agencies build up in-house expertise in green design and development.

The request for proposals (RFP) for building design services should clearly state an intention to select an architectural and engineering (A&E) team with the capability and experience to deliver green buildings as evidenced by successful completed—and monitored—projects. The statement of work for the project should include periodic meetings for team integration and the work of researching and evaluating numerous design options.

Greening "charrettes" (focused peer reviews or brainstorming sessions) are effective means of launching and maintaining the green planning process for a facility. Charrettes usually involve the interdisciplinary planning and design team discussed above. Charrette goals are aggressive and push participants to think "outside the box." These charrettes should have:

- Clear goals and background information;
- The full team (see above)—or at least those team members on-board at the time a charrette is held;
- An agenda that provides for an in-depth introduction (sometimes almost an educational session about the project and sustainable design strategies), break-out groups to address specific design issues in depth, and plenty of whole-group interaction time;
- Facilities and logistics that encourage a productive process;
- Good documentation during and after the charrette (this should be specifically budgeted for);
- Follow-up with a series of design and analysis activities; and
- Additional charrettes, workshops, or interdisciplinary design sessions as appropriate for the specific project.

Greening charrettes provide opportunities to work together as a team. This process, in and of itself, may be one of the best things that can be done for the project. Having a whole team seeking ways to achieve project goals can accomplish remarkable things, especially when contrasted with a more conventional process in which interdisciplinary participation more often comes up with reasons why something *can't* be done.

With new buildings or major renovations, this integration can work within a normal design/bid/build process, as well as with design/build contracts. Sound leadership, clearly defined goals articulated in requests for proposals, and cooperative participation in the process will provide effective results.

References

Environmental Design Charrette Workbook, available in print and online from The American Institute of Architects, (888) 272-4115; www.e-architect.com/pia/pubs/cote.asp.

Whole Building Design Guide, available online at www.wbdg.org.